Summary of the

National Marine Aquaculture Summit

Aquaculture 2007

MAKING IT WORK FOR AMERICA

U.S. Department of Commerce

National Oceanic and Atmospheric Administration

Introduction

"As a major growth engine, aquaculture can help preserve the historic ties that fishing communities have to the oceans and create a new and vibrant means for job creation."

–The Honorable Carlos M. Gutierrez, U.S. Secretary of Commerce

On June 2007, U.S. Commerce Secretary Carlos M. Gutierrez convened the National Marine Aquaculture Summit, a gathering of national business leaders, policy experts, government officials, and researchers from across the nation who exchanged ideas and made recommendations on how the United States could join the global aquaculture community and accelerate the integration of domestic aquaculture into U.S. seafood production.

While the first day of the Summit identified opportunities and challenges for U.S. marine aquaculture, the second day focused on what the federal government could do to help develop a sustainable U.S. aquaculture industry. Topics included legislation, research and development, economic incentives, investment programs, and scientific research.

At the heart of the discussions was the pending National Offshore Aquaculture Act of 2007. The bill, H.R. 2010 in the House and S. 1609 in the Senate, would give the National Oceanic and Atmospheric Administration authority to permit and regulate aquaculture in federal waters, three to 200 miles off U.S. coasts and expand a research program for all of marine aquaculture. On balance, the summit panelists concluded that the United States is poised and ready to expand ecologically responsible marine aquaculture. Aquaculture will create jobs and revenue for coastal communities and provide American consumers with more homegrown seafood choices.

Summit participants provided a wealth of information that will help guide future discussion about the legislation and about the future of U.S. aquaculture. They also concluded that legislation should provide for the development of an environmentally responsible and sustainable aquaculture industry, while also providing the framework for regulatory certainty that will aid development and growth of new business.

The summit also highlighted some of the other important economic drivers that prompted the Administration to develop and propose the offshore aquaculture legislation, including a desire to increase domestic production to close the $9 billion seafood trade deficit and to give American seafood farmers and investors greater opportunity to participate in the $70 billion global aquaculture industry. Domestic aquaculture accounts for only about 1.5 percent of global aquaculture production. Experts agree that with seafood consumption continuing to rise in the United States and without legislative action to spur domestic aquaculture, the country will see a major shortfall in seafood supply in the next 25 years.

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Opening Panel

The Time is Now: Why the United States Should Embrace Aquaculture

The Opening Panel of the National Marine Aquaculture Summit examined the factors contributing to the increased demand for seafood in the United States, and offered a vision for an expanded U.S. aquaculture program, including a focus on what an expanded program could offer investors, businesses, consumers, and U.S. coastal communities. The panel also addressed where U.S. aquaculture stands today in relation to the rest of the world.

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"It is clear that, for cardiovascular health, seafood is the most important food that someone can eat ..."

–Dr. Dariush Mozaffarian, Harvard Medical School and Harvard School of Public Health

HIGHLIGHTS

- The growing global demand for seafood, coupled with its proven health benefits, creates a significant opportunity to expand America's aquaculture industry.
- Seafood consumption continues to outpace supply in the United States and globally. In addition, research confirming the benefits of seafood for improved cardiovascular health in adults and neurodevelopment in children is driving increased seafood consumption in the U.S.
- Over 80 percent of the seafood consumed in this country is imported and that is driving a $9 billion annual trade deficit in seafood products.
- Large U.S. companies, including Red Lobster, are willing to buy domestically-produced seafood when it is available.

RECOMMENDATIONS

The panel recommended that the U.S. put in place balanced and effective regulations that establish clear ground rules and provide significant incentives to attract capital and stimulate research. Also, resources should be targeted toward resolving commercial bottlenecks that slow the development of the industry. The panel also recommended that the U.S. government and industry address aquaculture's impacts on the environment, including agreeing on what constitutes "acceptable impact" on the environment and then work to reduce overall impact. Another top recommendation was to develop marketing efforts that promote species grown in the United States to help familiarize American consumers with domestically farmed seafood products in the grocery store, seafood market, or in U.S. restaurants.

PARTICIPANTS

Dr. Paul Sandifer, *NOAA Ocean Service [Moderator]*
Dr. Dariush Mozaffarian, *Harvard School of Public Health*
Kim Lopdrup, *Red Lobster Restaurants*
Dr. Jason Clay, *World Wildlife Fund — U.S.*
Harlon Pearce, *Louisiana Seafood Promotion & Marketing Board*
Len Stewart, *Cooke Aquaculture*

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Panel Two

U.S. Aquaculture Investment Opportunities and Constraints

Panel Two brought together seafood and business investors, feed and equipment suppliers, and the venture capital community to discuss the potential for investment in aquaculture and associated issues. The discussion focused on the investment opportunities and constraints presented by U.S. aquaculture including the need for more hatcheries and hatchery production, feed and equipment, and other aquaculture investment opportunities.

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"If we don't make the right decisions as a nation in the coming years, we are going to have another situation where scientific advances that happen here fund economic development overseas."

–Michael Richard, Glitnir Bank

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HIGHLIGHTS

- Currently, aquaculture supplies nearly half of the world's seafood. Because of increased global demand for seafood, the United States could benefit from the development of marine aquaculture.
- The United States has an abundant grain supply, access to advanced technology and research capabilities, and a firm commitment to environmental sustainability. Together, these attributes present this country with an opportunity to become a major source of quality cultured seafood and seafood products.
- The United States has made significant advances on a number of fronts, including technology, nutrition and alternative protein sources, aquatic animal health, food quality and safety, and the development of environmentally sustainable culture practices.
- The impetus for environmental sustainability has and will continue to place the United States in a unique position to develop the industry correctly, thereby avoiding environmental issues facing many countries.
- Investors will place a high value on doing business in developed countries with advanced infrastructure and technical support.
- Marine aquaculture in the United States is currently mired in a confusing, cumbersome, and inconsistent regulatory climate. As a result, investment dollars are going overseas. Consequently, America is losing potential jobs and economic benefits and U.S. consumers are increasingly concerned about the quality, safety and environmental sustainability of our food supply.

RECOMMENDATIONS

The panel recommended streamlining the regulatory process, increasing investment in research and development, providing support for hatcheries, and investing in worker training—particularly those from the commercial fishing sector. It also recommended more emphasis on strategic investments. For example, the panel recommended that the U.S. public and private sectors invest in multi-species hatcheries; allow the use of NOAA's Capital Construction Fund for fishermen to help develop U.S. aquaculture; provide tax incentives to create a favorable investment environment; provide some form of crop insurance for aquaculturists; and increase investment in research and development to move the industry forward.

PARTICIPANTS

John Forster, *Forster Consulting [Moderator]*
Jeff Davis, *American Seafoods*
David Tze , *Aquacopia Ventures*
Michael Richard, *Glitnir Bank*
Todd Madsen, *OceanSpar LLC*
David Burris, *Cargill*

Panel Three

Supporting Seafood Jobs in Coastal Communities

Panel Three addressed the challenge of integrating aquaculture into the existing U.S. seafood industry infrastructure. Discussions focused on the ways that domestic aquaculture could meet the demands of seafood marketing companies, complement domestic wild catch, preserve working waterfronts, and provide opportunities for business ventures of all sizes in the United States.

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"We have the responsibility to provide food, seafood, be it wild capture or aquaculture product. We cannot escape that responsibility by evading it. We have to get about going down that right path and accomplishing it."

–Mike Voisin, Motivatit Seafoods

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HIGHLIGHTS

- Marine aquaculture has the potential to create jobs and enhance the livelihoods of the traditional fishing communities in the United States and, based on the experience with aquaculture in other developed countries, the U.S. commercial fishing sector could benefit from an expanded domestic aquaculture program.

- Reduced harvest quotas for the fishing industry have created an economic hardship in shoreside communities. Many people have given up commercial fishing and seaports are changing from working waterfronts to residential centers, resulting in lost marine-related employment.

- Commercial fishermen could bring significant skills to offshore aquaculture operations, including boat operating skills and knowledge of local waters and marine environment, as well as ingenuity and the ability to adapt.

- Hatcheries are an economic engine in most of the communities where they are located. For example, the large salmon hatcheries in Alaska have been very successful in rearing juveniles for release and eventual capture by the fishing community.

- Through long-term environmental monitoring, farms are already producing large quantities of high quality, healthy seafood with no significant impact to the local environment.

- Aquaculture brings those interested in a high-tech global industry back to the seafood industry.

RECOMMENDATIONS

The panel recommended that the U.S. balance the socio-economic and markets needs of existing seafood communities as the domestic aquaculture industry expands. In addition, the panel recommended that the United States continue promoting increased seafood consumption and that the U.S. place more emphasis on public outreach and education as aquaculture, including offshore aquaculture, develops in the United States.

PARTICIPANTS

Mike Voisin, *Motivatit Seafoods [Moderator]*
Randy Cates, *Cates International*
Rod Moore, *West Coast Seafood Processors Association*
Heather McCarty, *Heather McCarty & Associates*
Marion Kaiser, *Aquanor Marketing*
Roland Barnaby, *University of New Hampshire Cooperative Extension*

Panel Four

Using Hatcheries to Replenish Wild Stocks

Panel Four focused on the opportunities for hatchery operations to help replenish wild stocks, enhance recreational and commercial fishing, and restore habitats.

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"…what we have done with this hatchery program in Southern California … (is) re-establish one of the true game fish of Southern California."

–Tom Raftican, United Anglers of Southern California

HIGHLIGHTS

■ Hatcheries benefit commercial and recreational fisheries in a variety of ways. The release of cultured fish and shellfish into wild populations can potentially accelerate recovery of depleted stocks, ensuring the survival of threatened stocks and mitigating habitat loss caused by human activity. For example, some 55 percent of the fish caught in Southeast Alaska are hatchery-raised and 75 percent of the fish caught in Puget Sound come from hatcheries.

■ Aquaculture technologies play a significant role in all marine stock enhancement and stock replenishment programs. To be successful, these replenishment programs require the development of broad partnerships of state, federal, and special interest groups.

■ Replenishment programs can provide policymakers with science-based data for management plans; develop hatchery and nursery technologies for production of juveniles in captivity; determine if hatchery-produced juveniles could be used to enhance existing wild populations; and develop species-specific protocols for large-scale releases.

■ Stock replenishment programs, while beneficial, raise questions that need to be answered, including whether or not released fish and shellfish survive to contribute to recovery and replenishment of species; survive at a rate that is economically feasible; create a significant genetic or ecological impact on native stocks; and justify the cost of replenishment.

RECOMMENDATIONS

The panel recommended that U.S. stock enhancement programs include both a fishery management and an economic perspective; a clear assessment of stock effectiveness; adaptive management to maximize the effectiveness of stocking; and a way to resolve bottlenecks. It also recommended that stock enhancement programs make sense from a business perspective and that the United States give rigorous attention to environmental stewardship; conservation of wild stock production; health and genetics of fisheries stocks; and to more fully understanding the relationships between stocked fish and wild populations.

PARTICIPANTS

Dr. Conrad Mahnken, *Washington State Fish & Wildlife Commission [Moderator]*
Tom Raftican, *United Anglers of Southern California*
Dr. Larry McKinney, *Texas Parks & Wildlife Department*
Dr. Yoni Zohar, *University of Maryland Biotechnology Institute*
Dr. Tom McIlwain, *Gulf Coast Research Lab*
Dr. Ken Leber, *Mote Marine Lab's Center for Fisheries Enhancement*

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Panel Five

Developing Aquaculture: What the Federal Government Can Do

Panel Five examined current and potential future federal support to enable the development of a vital domestic marine aquaculture industry in partnership with the seafood industry, the broader business community, states, research institutions, and other partners.

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" … domestic production does matter. We need local and regional seafood for processors, distributors, and marketers that require a safe, stable supply of product to stay in business. And we all know that local seafood provides local jobs, and helps maintaining working waterfronts."

–Vice Admiral Conrad C. Lautenbacher, Jr. NOAA Administrator

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HIGHLIGHTS

■ While private investors, businesses, industry experts, and state and local governments all play a role in expanding America's domestic aquaculture program, the federal government has a unique ability to address issues that effect the success of offshore aquaculture nationwide.

■ The current permitting process can be repetitive and inconsistent as different agencies impose varying permitting requirements. Regional oversight is essential if aquaculture is to expand because of the different characteristics of each region. However, the present fishery management system was set up for wild caught commercial and recreational fisheries, not aquaculture.

■ Obtaining permits and staying in business should not be so formidable that companies are forced to go overseas. Currently, domestic companies have been forced to operate in other countries because it is too difficult to operate in the United States. This drains economic vitality from the U.S. In addition, foreign aquaculture operations may have a greater environmental impact than domestic programs.

RECOMMENDATIONS

The panel recommended that the federal government provide regulatory certainty for offshore aquaculture; support fundamental, long-term research; provide assistance to public-private partnerships to develop U.S. hatcheries; and more aggressively communicate the benefits and challenges of aquaculture. It also recommended that the federal government eliminate the often-repetitive permitting steps that different agencies now require for aquaculture; analyze the results of the environmental monitoring required in the proposed permitting process; conduct research on feeds; and develop education and retraining programs for the commercial fishing sector. Additional recommendations included the consideration of a third-party engineering certification for any aquaculture equipment going into the water. This kind of certification, like that offered in Norway, would help keep insurance rates lower in the long run.

PARTICIPANTS

Vice Admiral Conrad C. Lautenbacher, Jr., *NOAA Administrator [Moderator]*
John Connelly, *National Fisheries Institute*
Joe Hendrix, *SeaFish Mariculture*
Mark Drawbridge, *Hubbs-SeaWorld Research Institute*
Sebastian Belle, *Maine Aquaculture Association*

Panel Six

Legislation and Regulation for Marine Aquaculture

Panel Six focused on the regulatory and legal framework needed to develop U.S. marine aquaculture. Panelists discussed legislative and regulatory needs, including the National Offshore Aquaculture Act of 2007, as well as regulatory issues facing U.S. shellfish farming.

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" We need regulatory certainty, we need a realistic approach to limiting impacts ..."

Dr. Robert Rheault
Moonstone Oysters

HIGHLIGHTS

- Congress can play a significant role in ensuring a vibrant and productive domestic aquaculture program.

- For marine aquaculture to be successful in the United States, regulations must be transparent, consistent, and predictable. Currently, that is not the case. Aquaculture businesses face a confusing array of regulations on the local, state, and federal level and agencies often seem to be working at cross-purposes, particularly in the permitting process.

- Offshore aquaculture legislation should include strong environmental protections while providing incentives for businesses to develop marine aquaculture in the United States.

RECOMMENDATIONS

The panel recommended that the United States work to "get everyone on the same page" within the government so that new policies and regulations can be put in place that encourage rather than discourage business investment in aquaculture in our nation's marine waters. It also recommended that offshore aquaculture legislation should not be too prescriptive. Micromanaging each step of the process eliminates innovation and technological advancements. Rather, regulations should set a goal and allow companies to attain that goal in the most effective way. Other recommendations included more aggressive advocacy for aquaculture within NOAA and federal policies that encourage aquaculture while protecting the environment.

PANELISTS

Sam Rauch, *NOAA Fisheries [Moderator]*
Dr. Robert Rheault, *Moonstone Oysters*
Samuel (Billy) Plauche IV, *GordonDerr LLP*
Neil Sims, *Kona Blue Water Farms*
Tim Eichenberg, *The Ocean Conservancy*
Richard Smith, *Robinson & Cole LLP*

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Panel Seven

Economic Incentives and Research and Development for Aquaculture

Panel Seven focused on programs that could be tapped to develop aquaculture such as federal loan, incentive, and grant programs. Proposals for expanded research and development initiatives were also examined.

"… we need greater involvement of the government in renewed or continued funding of aquaculture research if we're going to remain technologically superior and competitive …"

–Jim Carlberg
Kent SeaTech

HIGHLIGHTS

- Worldwide, marine aquaculture is well-established as an economic engine and a food production system. However, the United States lags behind other countries in the establishment of marine aquaculture and has significant work to do if it is to catch up to other countries with regard to aquaculture production.

- While market demand is strong in the U.S., the opportunities to participate in aquaculture are found mainly overseas. This must change.

- Research funding aimed at technological innovation is the key to aquaculture development in the United States.

- Federal government action needs to be swift and streamlined for aquaculture to take its rightful place in the U.S. economy. Currently, the federal government provides less than $5 million in competitive research grants for marine aquaculture. But the United States would need to invest up to $50 million in competitive research grants for marine aquaculture to match the amount other countries are investing in aquaculture research.

RECOMMENDATIONS

The panel recommended that the government provide tax or other incentives, and risk protection for businesses to establish marine aquaculture operations, similar to government assistance to land-based farm businesses. Specifically, the panel recommended that the government gather and disseminate information on research and development and federal assistance programs; support regional aquaculture pilot and demonstration projects; provide incentives for initial production; support aquatic animal disease research; develop regional labs that would make the connection to academic research facilities; expand the funds available to address industry-identified problems; expand the loan funds available for aquaculture; and give the industry the information it needs to formulate insurance programs for the U.S. marine aquaculture industry.

PARTICIPANTS

Dr. Charles Wilson, *Louisiana Sea Grant [Moderator]*
Dr. Gary Jensen, *USDA-CSREES*
John Keane, *Capitol Risk Concepts*
Jim Carlberg, *Kent Sea Tech*
Fritz Jaenike, *Harlingen Shrimp Farms*
George Nardi, *Great Bay Aquaculture*

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Panel Eight

Scientific Research Priorities

Panel Eight focused on aquaculture research priorities and joint initiatives by the private sector with a variety of organizations. These included federal and state agencies, non-government organizations, private foundations, scientific research institutions, Sea Grant institutions, and others key collaborators that could fill key research needs on best management practices, regulatory issues, alternative feeds, and stock replenishment.

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"… mussel culture … is a tremendous opportunity for the local fishing industry. They can use their boats, convert their boats over to mussel boats, whether it's part-time or full-time."

–Dr. Richard Langan
University of New Hampshire's
Atlantic Marine Aquaculture Center

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HIGHLIGHTS

- Aquaculture is an emerging industry and research holds the key to its future success.
- Aquaculture research priorities need to focus on key areas of technology, feeds, and aquatic animal health.
- The countries leading world aquaculture production have already embraced the key goals of traceability, sustainability, and high quality and value-added items for their products and these are important goals for a U.S. effort as well.
- Ongoing U.S.-based research on alternative feeds includes algal-based meals and other products high in omega-3 fatty acids that will some day replace the need for fish meal and fish oil in aquaculture feeds.
- The United States is already a major producer of alternative aquaculture feeds. For example, the use of soybean meal in China's freshwater aquaculture industry has led to a five million metric ton use of soybean meal and created a significant export market for U.S. soybean farmers. Marine aquaculture is going to be the next big market for soy products around the world.

RECOMMENDATIONS

The panel recommended that the United States reach out and partner with the global leaders of the aquaculture industry. The panel also recommended that the safety of offshore aquaculture operations be considered and an emphasis placed on the automation of these operations as technologies are developed and refined. Other recommendations included encouraging biotechnology companies to focus on aquaculture technology improvements; providing funding to assemble the available information on the environmental effects of shellfish and offshore aquaculture; developing and demonstrating improved techniques for shellfish and fish culture to minimize disease issues; and on training a viable workforce to support aquaculture.

PARTICIPANTS

Dr. Richard Langan, *Atlantic Marine Aquaculture Center [Moderator]*
Dr. William Harris, *MariCal*
Dr. David Kyle, *Advanced BioNutrition*
Dr. Sandra Shumway, *University of Connecticut*
Dr. Michael Cremer, *U.S. Soybean Export Council*
Dr. Bruce Anderson, *Oceanic Institute*